United States Department of Agriculture

NRCS

Helping People Help the Land

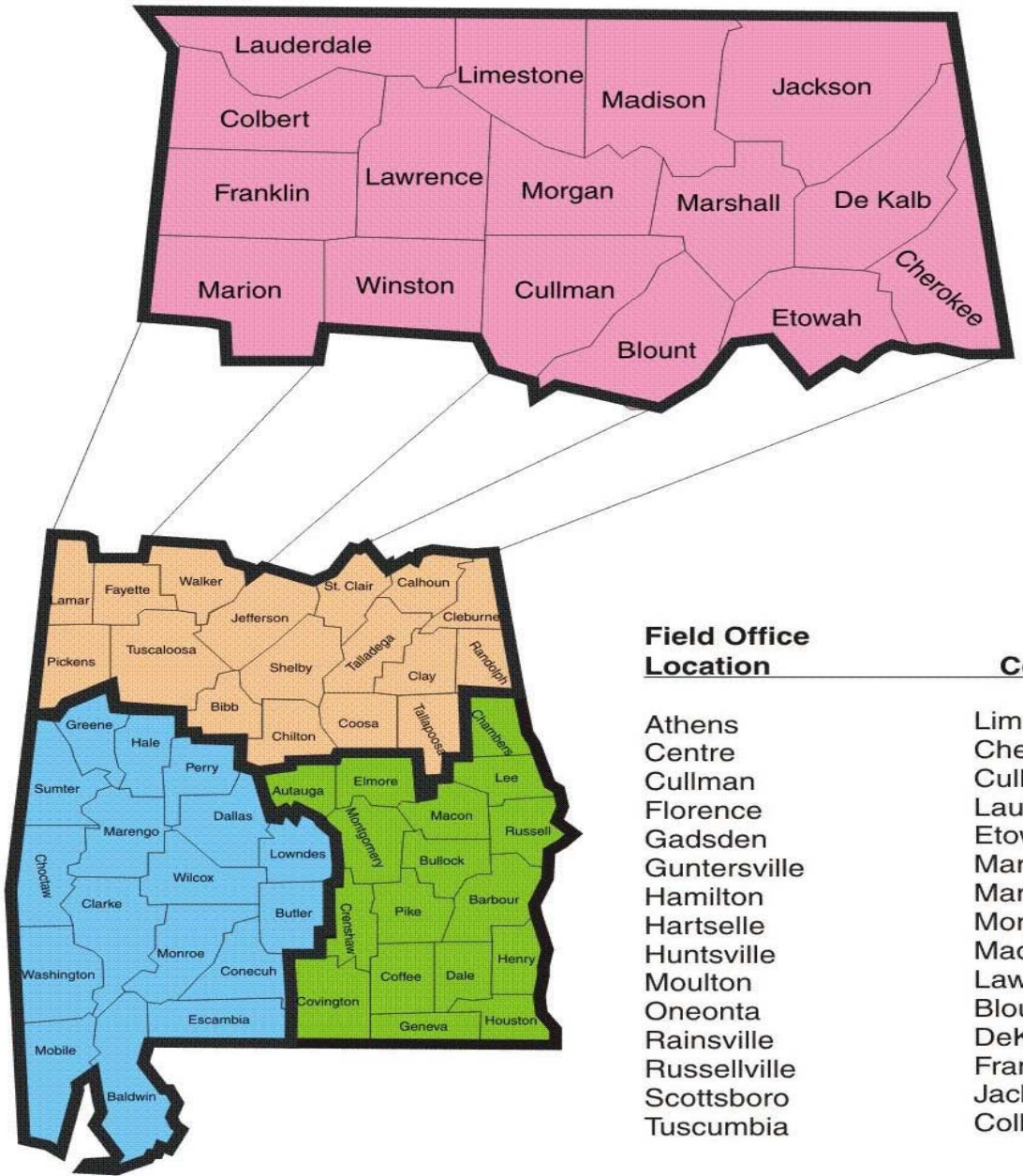
NRCS – Natural Resources Conservation Service

PERMITTING ISSUES WITH FARM PONDS

Jeff Allred

Resource Engineer

North



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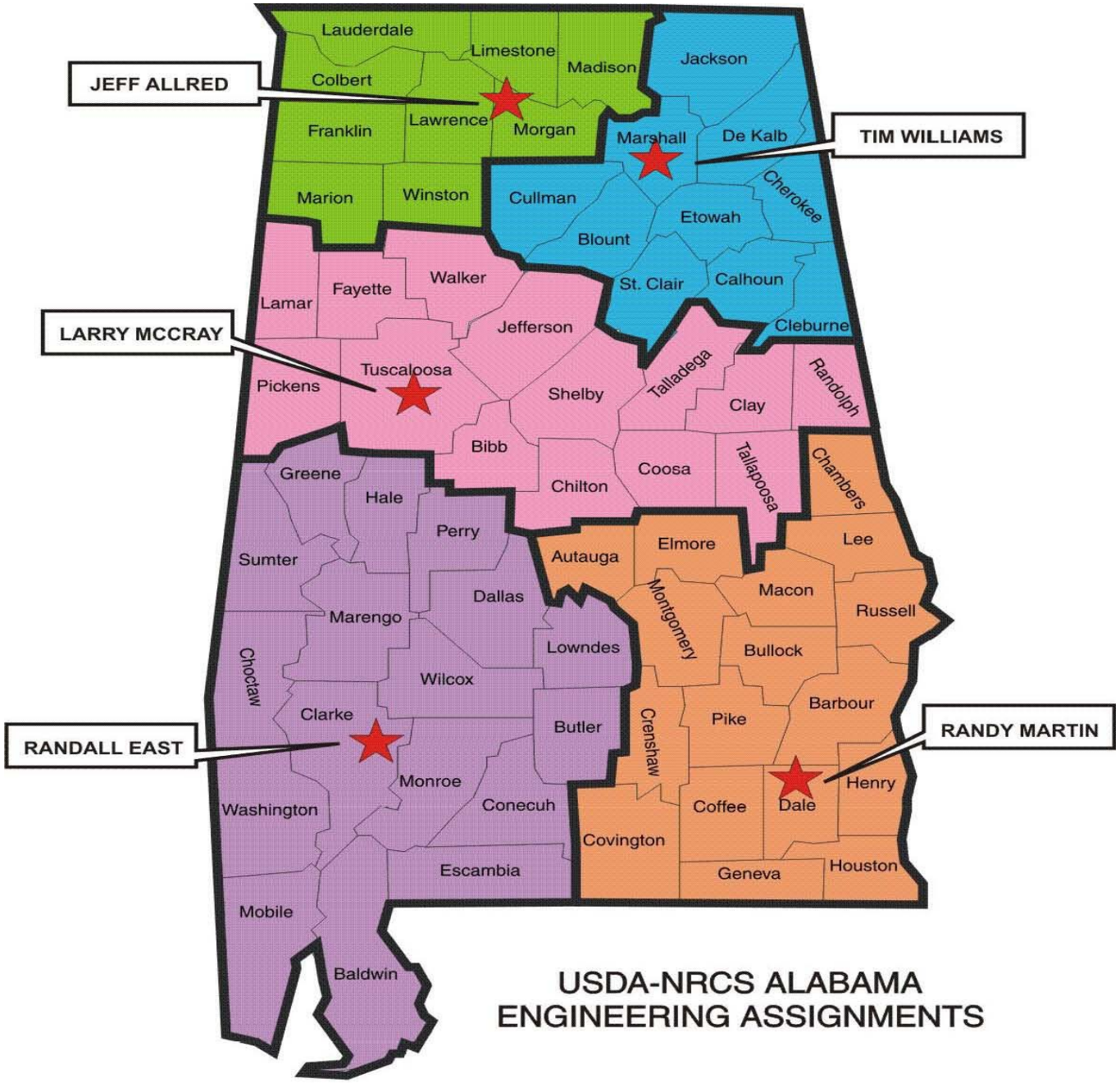

USDA-NRCS ALABAMA ENGINEERING ASSIGNMENTS

United States Department of Agriculture

NRCS Natural Resources Conservation Service

Alabama

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Alabama

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Welcome! **Alabama** NRCS Helping People Help the Land!

Alabama NRCS Awards Conservation Innovation Grants

Gary Kobylski, Alabama State Conservationist for Natural Resources Conservation Service (NRCS), announced the award of $81,500 dollars to fund two state Conservation Innovation Grants (CIG). The award grantees are Auburn University and Tuskegee University.

...More Info

Wetlands Reserve Program (WRP) Applications Being Accepted.

WRP is designed to provide technical and financial assistance to landowners interested in restoring converted cropland back into wetlands. The goal of the program is to restore wildlife habitat and improve water quality.

...More Info

Applications Period Extended for the Grassland Reserve Program (GRP)

NRCS extend the sign-up for the Grassland Reserve Program (GRP) until July 13, 2007. The sign-up is targeted for limited resource producers and/or new and beginning farmers whose farming operation is in the Blackland Prairie soils region of the state.

Information About:

- Soils
- Water
- Air
- Plants
- Animals

Information For:

- Communities
- Farmers and Ranchers
- Homeowners
- Alabama NRCS Employees
- Policy Makers
- Teachers and Students
- Alabama Earth Team Volunteers
- Technical Service Providers
- Federal Business Opportunities

NRCS - ALABAMA FARM POND EXEMPTION (for cost-share ponds)

NO permit required if:

1. Pond is constructed in upland area

2. Pond is for Irrigation or livestock water and “commensurate” with the size of the operation.

THE PROBLEM OF DEFINING COMMENSURATE

Random House College Dictionary defines commensurate as:

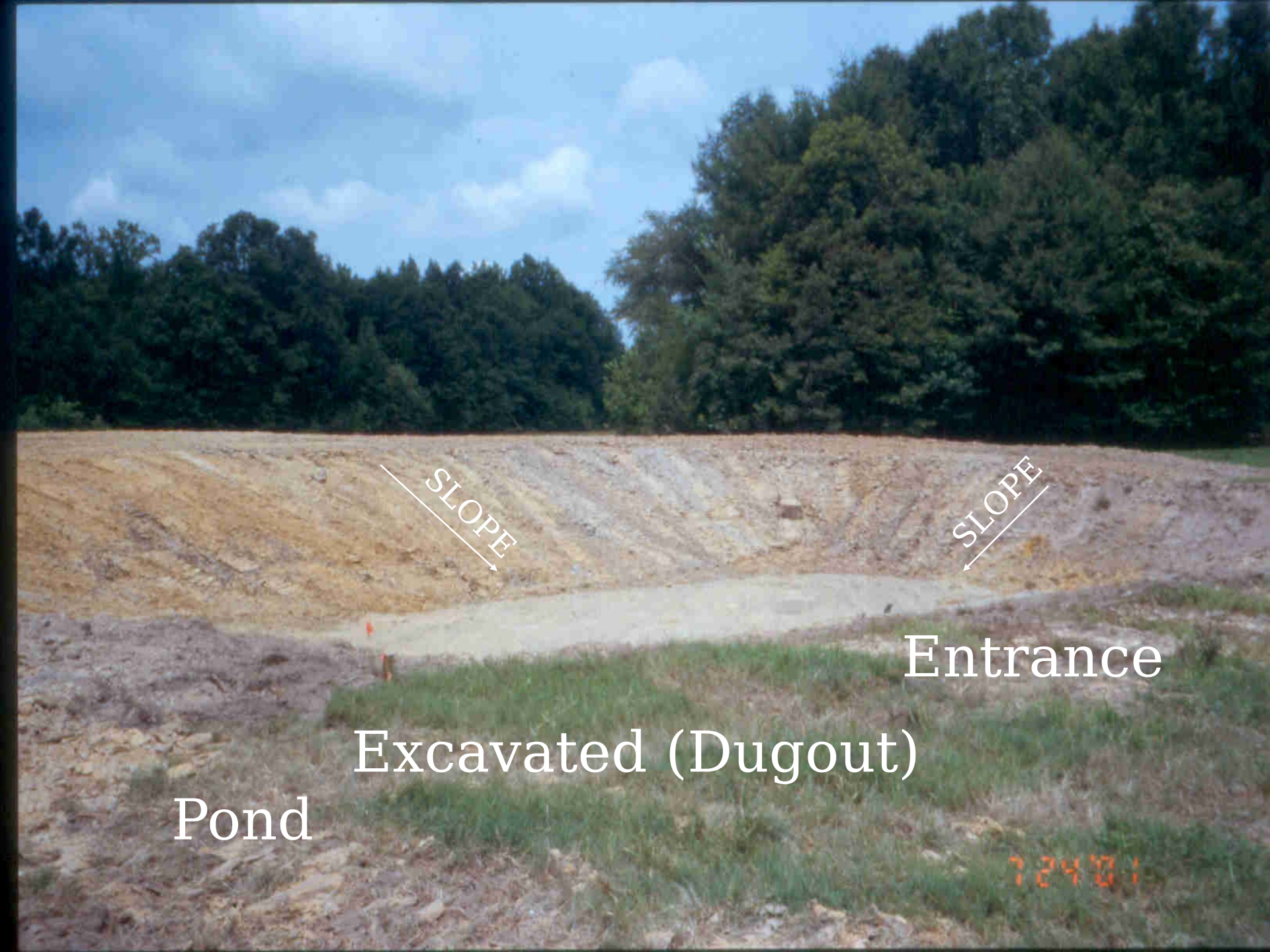
1. **Having the same measure; of equal extent or duration.**
2. **Corresponding in amount, magnitude, or degree.**
3. **Proportionate; adequate.**
4. **Having common measure; commensurable.**

HOW DO YOU APPLY TO FARM PONDS?

TWO TYPES OF PONDS:

1. **Excavated –** otherwise known as “dug out”

2. Earthfil – ponds that have an embankment higher than 3 feet


SLOPE
SLOPE
Entrance
Excavated (Dugout)
Pond
7 2 4 0 1

FOR EXCAVATED (DUG OUT) PONDS, COMMENSURATE IS NOT A PROBLEM

1. Excavated ponds are located in low areas

2. Concerned with hydric soils, hydrophytic vegetation and hydrology

3. Excavated ponds are relatively small in size

4. Pond size is determined by number of livestock, days of storage (usually worst 6 dry months of year) as well as seepage and evaporation. Total storage is known and pond is designed (sized) to meet total storage needed.

Microsoft Excel - Excavated Pondver6.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

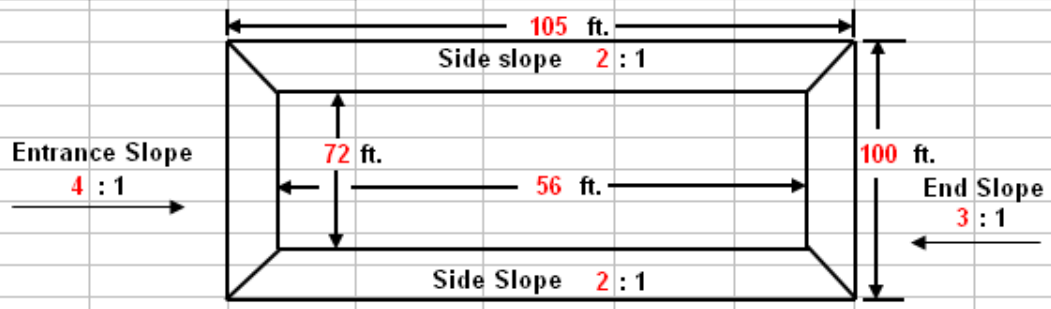
Type a question for help

Arial 10 100%

Reply with Changes... End Review...

C12 30

	A	B	C	D	E	F	G	H
12	Number of Cattle =		30			Number of Days =		180
13								
14	Assumed / Actual Surface Dimensions =				100 X 105	Ft.		
15								
16	Desired Depth =		7	Ft.				
17								
18	Desired Slopes =		Entr. Slope	End Slope	Side Slope	Side Slope		
19			4	3	2	2		
20								
21	Water Needs =		0.249	Ac-Ft				
22								
23	Seepage and Evaporation Losses =				0.864	Ac-Ft		
24								
25	Total Storage Required =			1.112	Ac-Ft			
26								
27	Top Dimensions =		100 X 105		Ft.			
28								
29	Bottom Dimensions =		72 X 56		Ft.			
30								
31	Volume =	1824.5	Cu. Yds.	OR	49261.3	Cu. Ft.		
32								
33	Designed Storage =		1.131	Ac. Ft.	POND SIZE IS ADEQUATE			



Exc. Pond Design | Aux. SW Design | Tables | Data | AL-ENG-7

Draw AutoShapes

Ready NUM

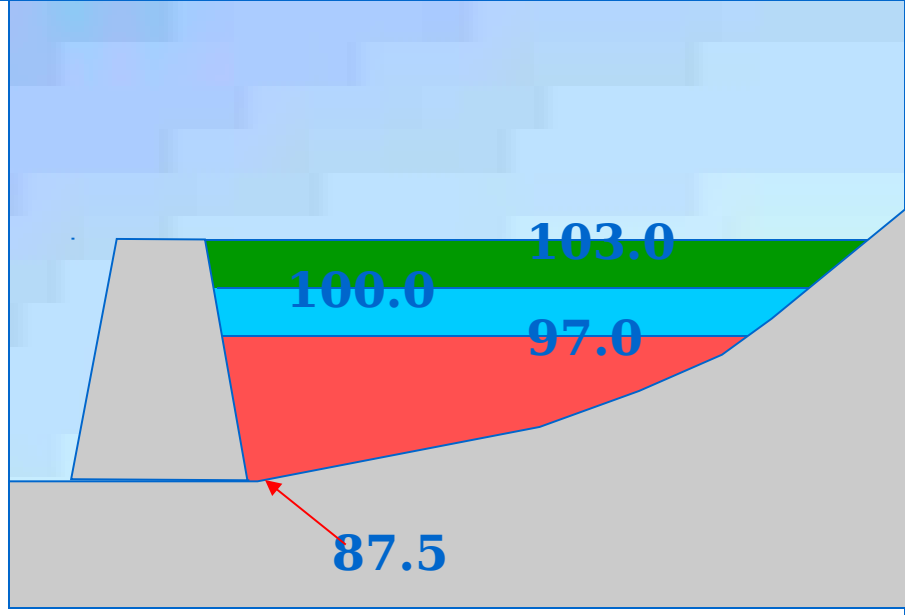
TWO TYPES OF PONDS:

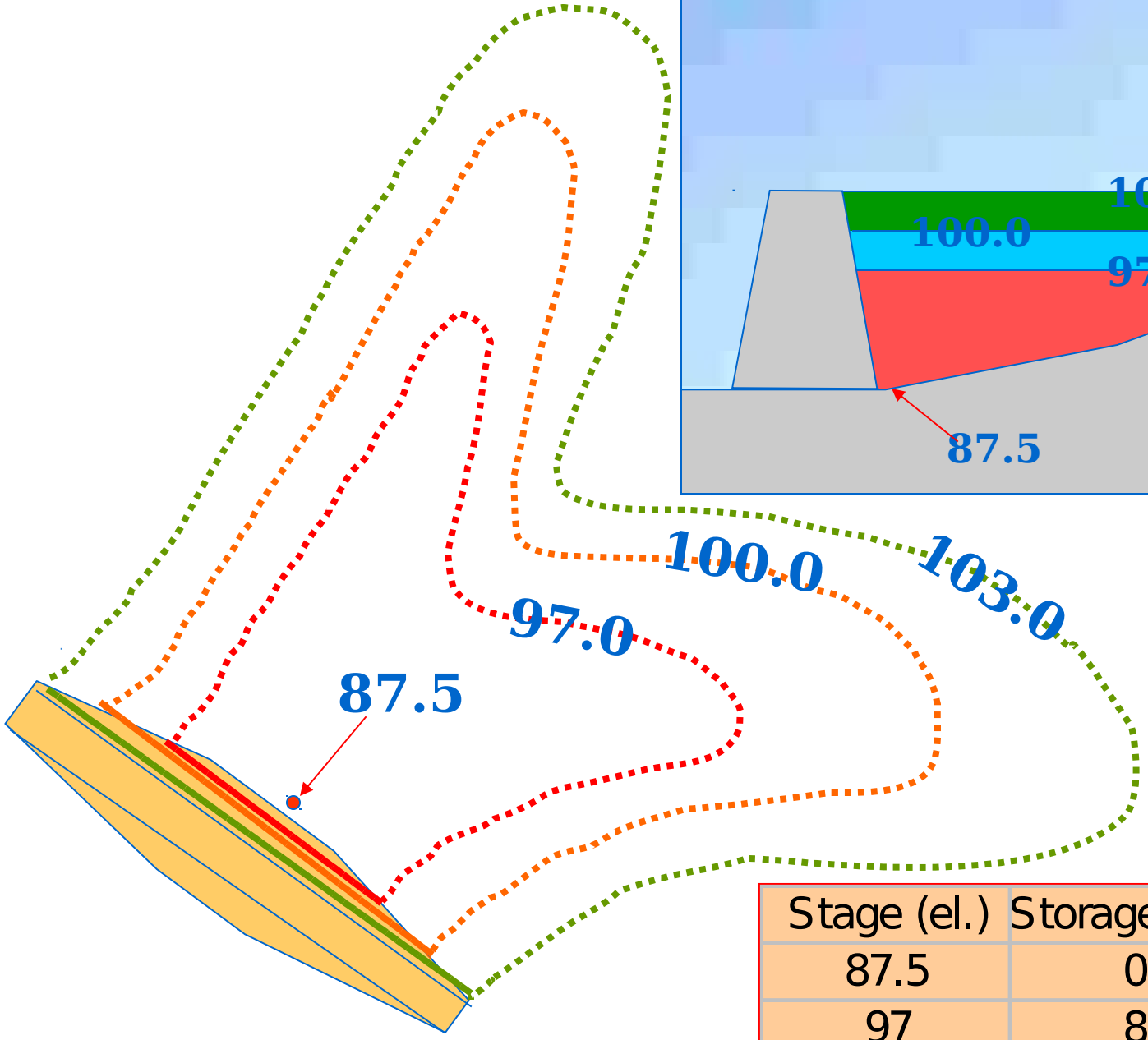
1. Excavated – otherwise known as “dug out”

2. **Earthfill –** ponds that have an embankment.

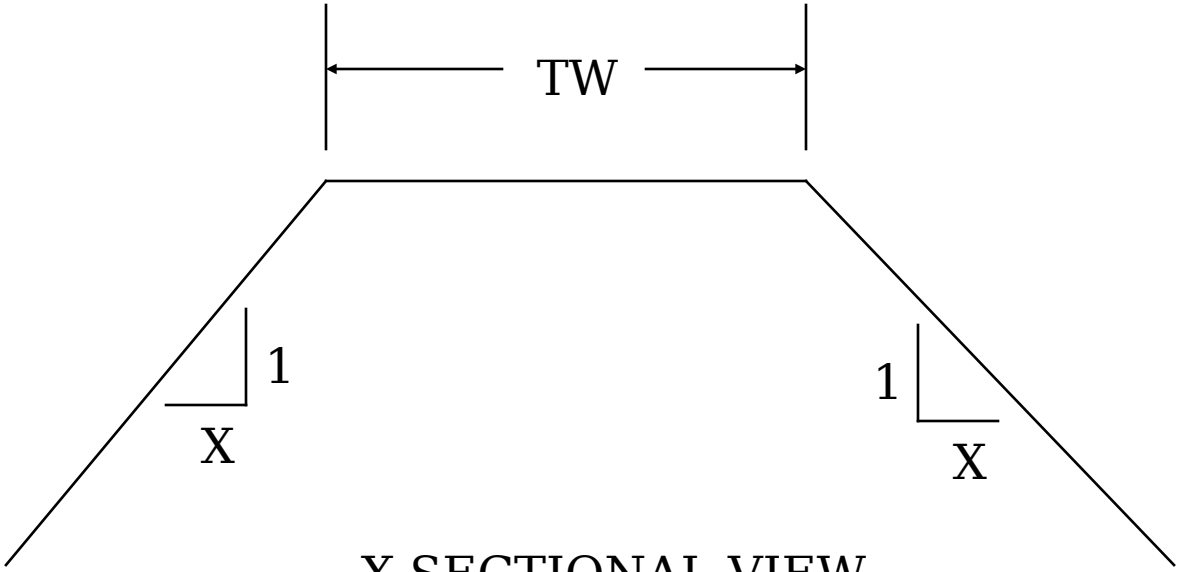
   Still concerned with hydric soils, hydrophytic vegetation and hydrology but also concerned with “blue line” noted on a USGS topographic map.

Front Slope
Earthfill
Pond

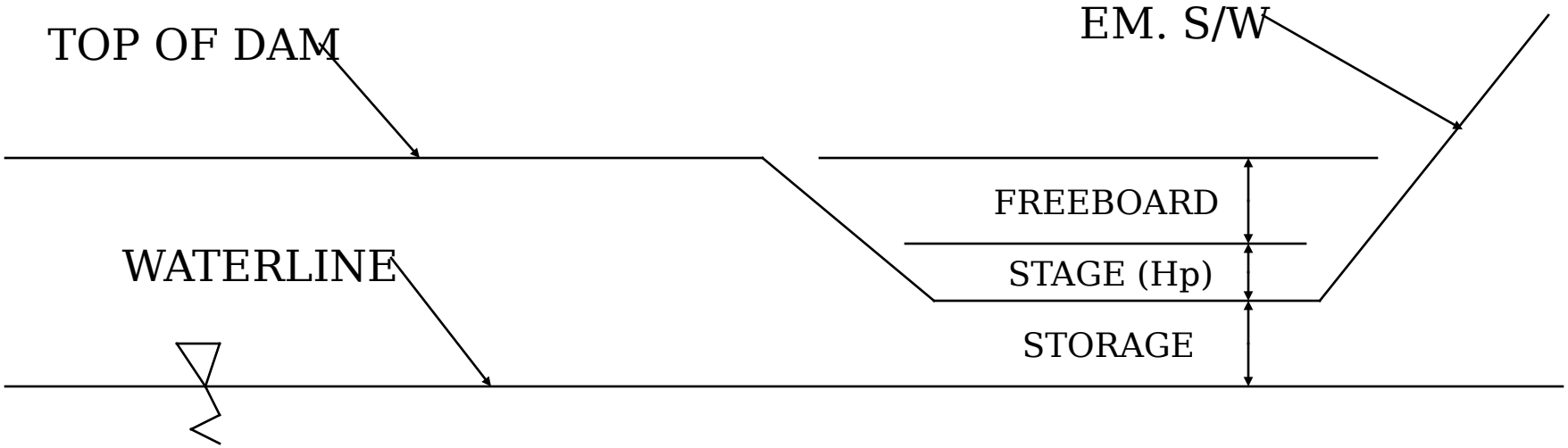




Stage (el.)	Storage (ac.)
87.5	0
97	8
100	12
103	17.5



X-SECTIONAL VIEW



PROFILE DAM & X-SECTION EM. S/W

FOR EARTHFILL PONDS, COMMENSURATE IS A PROBLEM

- NRCS experience shows that embankment ponds for irrigation and livestock purposes should always have at least 8 feet of water at the deepest part of the pond.

- In Alabama, the maximum storage period is normally 180 days or 6 months (dry months of the year) for animals.

FOR EARTHFILL PONDS, COMMENSURATE IS A PROBLEM

- NRCS experience shows the drought level for a pond to be 4 feet below normal pool elevation. Therefore, storage at the drought level is considered available water for irrigation or livestock purposes.

- A water budget is needed to determine if an earthfill pond is commensurate in size.

Estimated livestock water requirements in AL shall be as follows:

Livestock Production [1]	*Drinking Water Needs (gallons/day/hd)*
Dairy cattle	25
Beef cattle	12
Sheep or Goats	1.5
Horses	12

[1] *Other livestock may be used with proper documentation to NRCS to predict water needs.*

Example 1: *A producer with a 50-head beef cattle operation has requested a pond exemption. An excavated pond site is not feasible. An embankment pond site with 8 ft. of water at the dam would have 0.6 acre of surface area. At a 4 ft. depth (drought level) the water surface would be 0.25 acres. Is this site for a pond defensible?*

50hd @ 12 g/day/hd	=	600 gal/day
Maximum storage period	=	180 days
1 acre-ft	=	325,851 gal
Therefore, cattle water needs	=	0.331 acre-ft
Available water at 4 ft drought level 0.4 X 0.25 ac. X 4 ft.	=	0.40 acre-ft (defensible *)
Pond total volume 0.4 X 0.6ac. X 8 ft.		1.92 acre-ft

* Even though the available water at the drought level is more than the cattle needs for the storage period, the site is still defensible since there is only 8 ft. of water at the dam.

Example 2: *A producer with a 100-head beef cattle operation has requested a pond exemption. The producer wants a 2 acre pond. The pond will need to have 12 ft. of water at the dam to produce a 2 acre pond. At the 8 ft. depth (drought level) the water surface would cover 1.2 acres. Is the 2 acre pond defensible?*

100 hd @ 12 g/day/hd	=	1,200 gal/day
Maximum storage period	=	180 days
1 acre-ft	=	325,851 gal
Therefore, cattle water needs	=	0.663 acre-ft
Available water at 8 ft drought level 0.4 X 1.2 ac. X 8 ft.	=	3.84 acre-ft (not defensible*)

* A pond with 8 ft. of water at the dam may be defensible if the 4 ft. drought level met the needs of the cattle

Estimated crop water needs for common crops in AL shall be as follows:

Ag. Production [1, 2]	*Crop Water Needs (Ac-ft / acre of crop)*
Row crops	1.5
Tobacco	1.0
Hay, Forage or Pasture	1.25
Vegetables[3]	1.25
Orchards	1.5

[1] Other crops shall provide documentation to NRCS to predict water needs.

[2] Producer must have existing irrigation equipment. All new operations or operations without irrigation equipment will be required to submit an exemption determination request to the USACE.

[3] Producers that double or triple crop vegetables can include crop water needs for each crop when predicting water needs.

Example 3: *A producer irrigates 50 acres of cotton and would like to have a 20 acre irrigation pond. The pond site would have 20 acres of surface area with 16 ft. of water at the dam and 15 acres surface at the 12 ft. depth (drought level). Is this site for a pond defensible?*

Crop Acreage	**=**	**50 acres**
Water needs	**=**	**1.5 ac-ft/ac**
Total water needs	**=**	**75 ac-ft**
Available water at 12 ft drought level 0.4 X 15 ac. X 12 ft.	**=**	**72 acre-ft (defensible)**
Pond total volume 0.4 X 20 ac. X 16 ft.		**128 acre-ft**

Example 4: *A producer irrigates 100 acres of pasture. The producer wants a 25 acre pond. The pond will need to have 20 ft. of water at the dam to produce a 25 acre pond. At the 16 ft. depth (drought level) the water surface would cover 22 acres. Is the 25 acre pond defensible?*

Pasture Acreage	=	100 acres
Water needs	=	1.25 ac-ft/ac
Total water needs	=	125 ac-ft
Available water at 16 ft drought level 0.4 X 22 ac. X 16 ft.	=	140.8 acre-ft (not defensible*)

* In order for this site to be defensible, the water depth at the dam must be reduced (but not less than 8 ft.) until the drought level storage is at or below the total water needs for irrigation.

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Alabama Personnel Directory (4.32 MB)

State Office Sections

- Ecological Sciences
- Engineering
- Human Resources
- Information Technology
- Public Affairs
- M0-15 Soils (Will open in a new window)
- National Resources Inventory (NRI)
- Programs and Outreach

(The following sites will open in a new window.)

- Alabama State Office Personnel and Field Office Location/Staff Information (Personnel) (will open in a new window)-- Search for a specific employee online by specified designation (by state, department, last name, etc.). Office addresses and maps can also be generated.
- Local NRCS Service Centers (will open in new window) -- USDA Office Locator: Information about service center location (county and related offices) across the U.S. There are Service Centers in most U.S. counties.
- NRCS States and Regional Offices Websites
- Institutes and Centers
- Major Land Resource Areas (MLRA)
- NRCS Headquarters Contacts (Washington, DC)

Additional Information

Done Trusted sites